

REMARKS

In view of the foregoing amendments and remarks that follow, reconsideration and allowance of this application are respectfully requested.

Claims 33 and 34 have been cancelled without prejudice in response to a restriction requirement. Applicant hereby affirms election of invention of Group I, claims 1-32. Applicant reserves the right to submit non-elected claims 33 and 34 in a divisional application.

Claims 18-32 were rejected under 35 U.S.C. 102(b) as being anticipated by Ginn et al. (US Patent 6,097,277). Independent claim 18 has been amended to recite “a circuit element formed on a pair of opposed surfaces of an insulating substrate composed of a hexahedron, comprising electrodes formed on the pair of opposed surfaces of the insulating substrate that make up the circuit element which also function as external terminals formed on the pair of opposed surfaces of the insulating substrate.” Independent claim 25 has been amended to recite a first pair of electrodes and a first shared electrode coming into contact with two first resistors on a front surface of an insulating substrate. Amended claim 25 also recites a pair of second electrodes and a second shared electrode coming into contact with two second resistors on a back surface of the insulating substrate. Support for these amendments is set forth at least in paragraph [0007] of the specification.

It is submitted that Ginn et al. does not disclose various limitations recited in claims 18 and 25. Specifically, Ginn et al. does not disclose electrodes which make up a circuit that also function as external terminals formed on opposing sides of an insulating substrate, as recited in claim 18. Furthermore, Ginn et al. does not disclose either a first shared electrode coming into contact with two first resistors on a front surface of an insulating substrate or a second shared

electrode coming into contact with two second resistors on a back surface of the insulating substrate, as recited in claim 25.

As shown in FIG.1 of Ginn et al., this reference discloses a resistor network assembly 10 on a rectangular substrate 12 having a top surface 28, a first side surface 29 and a second side surface 27. A first resistor 26 and conductors 15 in electrical contact with the first resistor are disposed on the first side surface 27. Similarly, a second set of resistor 26 and conductors 15 are disposed on the second side surface 29. Separate conductors 14 are disposed on top surface 28 in electrical contact with conductors 15 on the two opposing side surfaces at the edge of substrate 12. See col. 2, line 67 to col. 3, line 7. Solder spheres 18 rest in cavities 16 on conductors 14 and are used to connect to an external electrical circuit. See col. 3, lines 17-29. As such, Ginn et al. does not disclose electrodes which make up the circuit also functioning as external terminals formed on opposed surfaces of an insulating substrate. Rather, Ginn et al. discloses conductors 15 which make up a resistor circuit and separate conductors 14 in electrical contact with electrodes 15 functioning as external terminals. Moreover, Ginn et al. discloses conductors disposed on a total of three surfaces rather than on two opposing surfaces. Specifically, Ginn et al. discloses conductors 15 which make up the resistor circuit disposed on two opposing side surfaces 27 and 29 and separate conductors 14 in electrical contact with terminals 15 functioning as external terminals disposed on top surface 28 running perpendicular to side surfaces 27 and 29.

Furthermore, Ginn et al. does not disclose either a first shared electrode coming into contact with two first resistors on a front surface of an insulating substrate or a second shared electrode coming into contact with two second resistors on a back surface of the insulating substrate. Rather, Ginn et al. discloses conductors 14 on top surface 28 in electrical contact with

conductors 15 on opposing side surfaces 27 and 29, each side surface running perpendicular to top surface 28 and each containing one of the resistors in contact with shared conductors 14 via conductors 15.

In view of the foregoing, independent claims 18 and 25, and all claims dependent thereon, are patently distinct from over Ginn et al. It is therefore requested that the rejection of claims 18-32 be withdrawn.

In addition, dependent claims 19, 22, 27 and 30 recite limitations that are not disclosed in Ginn et al. Specifically, claims 19 and 27 recites a nickel plate layer and a solder plate layer laid down, in that order, on the surfaces of external terminal areas of said electrodes. As shown in FIG.1 of Ginn et al., this reference shows conductors 14 disposed on top surface 28 containing solder spheres 8 and in electrical contact with conductors 15 disposed on opposing side surfaces 27 and 29. Hence, Ginn et al. does not disclose a nickel plate layer and a solder plate layer laid down, in that order, on the surfaces of external terminal areas of conductors 15.

Claims 22 and 30 recite conductors in electrical contact with a resistor, wherein the conductors are laid over the resistor. These limitations serve to maximize the area on the conductor which functions as an external terminal. FIG. 1 of Ginn et al. discloses conductors 15 in electrical contact with resistor 26, wherein conductors 15 are laid under resistor 26. Therefore, Ginn et al. does not disclose the features particularly recited in claim 22 and 30. Accordingly, claims 19, 22, 27 and 30 are further patentably distinct from Ginn et al.

In light of the foregoing, reconsideration and allowance of this application are respectfully requested.

Respectfully submitted,

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